

Notes on *Trichorhina* I. Two new species from Northeastern Brazil (Isopoda, Oniscidea, Platyarthridae)

Leila A. SOUZA-KURY

Depto Zoologia, UFRJ, CCS bloco A, Ilha da Cid. Univ., 21.941

Rio de Janeiro, RJ, Brazil

Notes on *Trichorhina* I. Two new species from Northeastern Brazil (Isopoda, Oniscidea, Platyarthridae) – *Trichorhina macrops* n. sp. and *Trichorhina guanophila* n. sp. are described respectively from Pernambuco and Bahia states (Northeastern Brazil). The last named species is a cave-dweller living in bat guano. *T. heterophthalma* Lemos de Castro, 1964 is recorded for the first time from Brazil (Northeast and Southeast) and Venezuela. These are the first records for the genus *Trichorhina* Budde-Lund, 1908 in Northeastern Brazil. The measurements of relative distance of noduli laterales from the margins of pereonites are for the first time used in Platyarthridae. *Trichorhina yucatanensis* Mulaik, 1960, described from Mexico, is herein considered a junior synonym of *Porcellio pearsei* Creaser, 1938.

Key-words: Crustacea - Oniscidea - *Trichorhina* n. spp. - Brazil - new synonymy.

INTRODUCTION

In the small family Platyarthridae Verhoeff, 1949, *Trichorhina* Budde-Lund, 1908 represents a vast assemblage of forms - more than fifty nominal species - most not adequately known. It apparently constitutes a Gondwanic lineage (VANDEL 1946:248) but the original distribution is now somewhat disguised due to the introduction by man in Europe.

This is the first contribution of a series devoted to the description of Brazilian species of *Trichorhina*. There are only a few species cited from Brazil, but, a great amount of indetermined material from many localities has been examined by me, revealing many undescribed species. The study of the genus called also for the need of emended diagnoses of species recorded from Brazil, new synonymies and new records.

VANDEL proposed (1960) a standard graphic representation of the topology of the noduli laterales in pereonites I-VII based on the relative distance of the noduli from the lateral (b/c) and posterior (d/c) margins of each pereonite. Since then, these graphics became common in the descriptions of Philosciidae and some other families. Hitherto these relations have not been used in Platyarthridae. I think this is an important source of morphological information, so b/c and d/c graphics are herein provided in the species descriptions.

Abbreviations of the specimen repositories are: DZUFRJ - Departamento de Zoologia, Universidade Federal do Rio de Janeiro; MHNG - Muséum d'Histoire Naturelle de Genève, and MZUSP - Museu de Zoologia da Universidade de São Paulo. Abbreviations of Brazilian States cited are BA = Bahia; RJ = Rio de Janeiro; PE = Pernambuco. All measurements are in mm. Length and width of species are the maximum values within the range of the material examined.

Trichorhina heterophthalma Lemos de Castro, 1964 (Figs 1-10)

Trichorhina heterophthalma Lemos de Castro 1964:2; VANDEL 1968:53; 1973:157; SCHULTZ 1975: 185, fig. 6; 1977: 152; BOWMAN 1977:662; VANDEL 1981; TAITI & FERRARA 1991: 217.

Material examined. - Brazil, BA, in African violet roots, 91 females (MNRJ uncat.); RJ, Rio de Janeiro, Parque Lage, 17 Mar 1990, leg. L.A. Souza/A.B. Kury, 19 females (DZUFRJ 10.001), 15 females (MHNG) same data; Venezuela, Anzoategui, Guanta, Cueva An-I 500 m alt., 5 females (MNRJ uncat.) 01 May 1967, leg. C. Bordón.

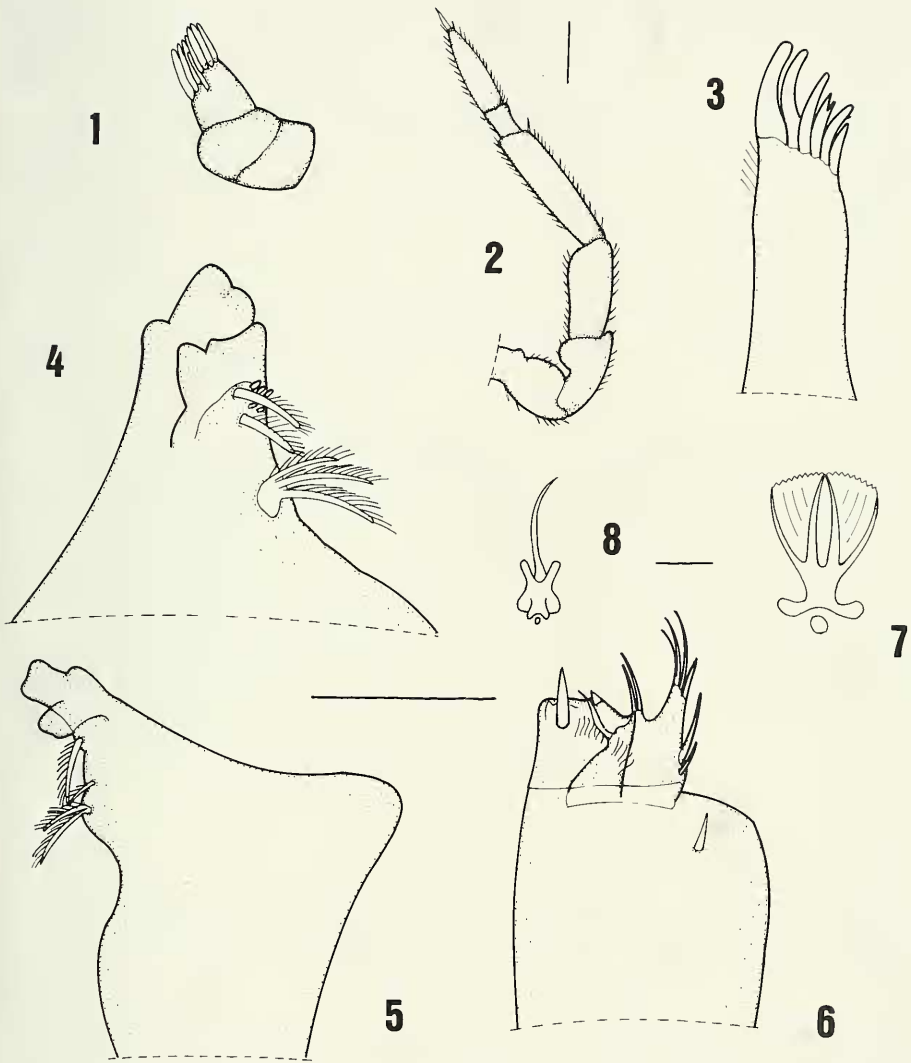
Diagnosis. - By the double pair of noduli laterales on pereonite VII, the row of rods in left mandible, and the projected base of noduli laterales, it seems more closely related to *T. tomentosa*, another species without pigmentation and highly reduced eyes. Easily distinguished by the unequal sized pair of ommatids forming the eye; *T. tomentosa* possesses a single small ommatid.

Distribution. - Brazil (new record); Galapagos Is.; Mexico; U.S.A.; Venezuela, (new record); West Indies; Hawaii.

Remarks. - 1) Distal article of antennule with 8 aesthetascs (Fig. 1); 2) molar process of right mandible with 2, left mandible with 3 penicils; a row of rods present between molar and incisor processes of left mandible (Figs 4-5); 3) endite of maxilliped with a large tooth ("cerda pequena e grossa" of LEMOS DE CASTRO 1964:5) and 2 smaller in the distal margin; median part hairy (Fig. 6); 4) noduli laterales - 4.1) position: see graphics (Figs 9-10); 4.2) number per pereonite in each side: 1 in pereonites I-VI, 2 in pereonite VII; 4.3) shape: bristle arising from a base with two lateral projections (Fig. 8); 5) Protopods of uropods and antennae with small scale spines.

Trichorhina guanophila n. sp. (Figs 11-27)

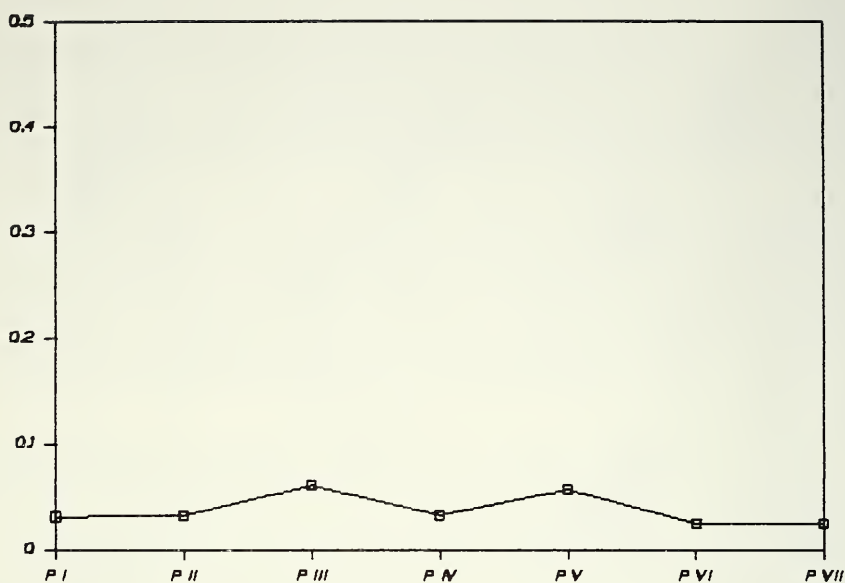
Material examined. - BA, Campo Formoso, Lapa do Convento, 01 February 1987 leg. F. Chaimowicz, on bat guano: 1 male holotype and 4 female paratypes (MZUSP), 3 female paratypes (MHNG).



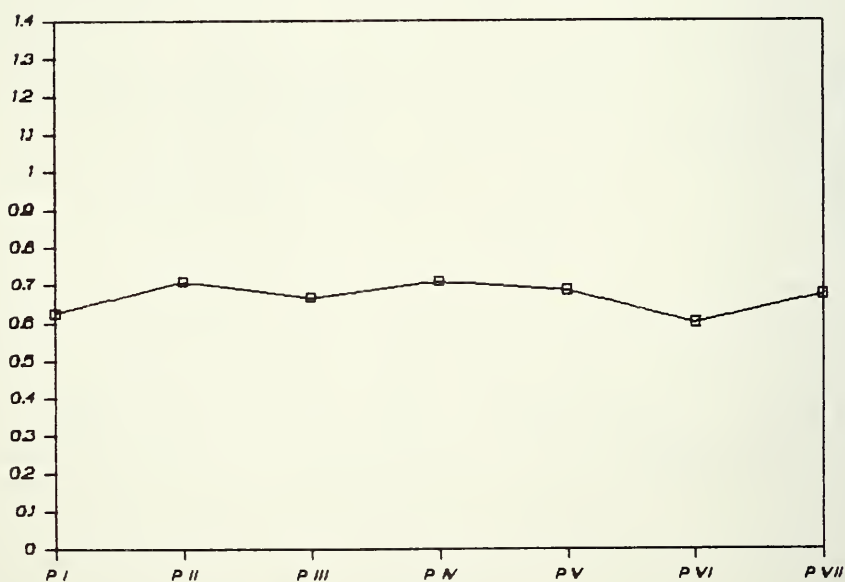
FIGS 1-8.

Trichorhina heterophthalma Lemos de Castro, 1964. Fig. 1. Antennule; Fig. 2. Antenna; Fig. 3. Exite of the maxillula; Fig. 4. Left mandible; Fig. 5. Right Mandible; Fig. 6. Maxilliped; Fig. 7. Scale spine; Fig. 8. Nodulus lateralis of pereonite VII. Top scale bar = 0.1 mm Fig. 2; left scale bar = 0.1 mm Figs 1, 3-6; right scale bar = 0.01 mm Figs 7-8.

9



10



Figs 9-10.

Trichorhina heterophthalma Lemos de Castro, 1964. Position of the noduli laterales relative to the margins of pereonites I-VII. Fig. 9. b/c (posterior margin); Fig. 10. d/c (lateral margin). Left scale bar = 0.1 mm Fig. 12; right scale bar = 0.1 mm Figs 11, 13-16.

D i a g n o s i s . – Related to *T. tomentosa* and *T. heterophthalma* by the double pair of noduli laterales in pereonite VII. It differs by the smaller depigmentation and eye reduction, by the featureless base of the nodulus lateralis. A comparison with the other species having 4 to 6 ommatids reveals the following differences:

T. papillosa: 1) Molar process of mandibles with 4-5 penicils (3 in *T. papillosa*); 2) exite of the maxillula with 8 teeth, of which 1 bifid and 1 trifurcated (7 of which 2 bifid in *T. papillosa*); 3) endite of the maxilliped with truncated projection in inner distal margin.

T. quisquiliarum: 1) Eyes with 5 black ommatids (6, of which only 2 pigmented in *T. quisquiliarum*).

T. albida: 1) Absence of dorsal “small buttons” (VERHOEFF 1946:10).

T. australiensis: 1) Molar process of mandibles with 4-5 penicils (1 in *T. australiensis*); 2) exite of the maxillula with 8 teeth, of which 1 bifid and 1 trifurcated (9, 5 of which bifid in *T. australiensis*).

T. barbouri: 1) Smooth tegument (granular in *T. barbouri*).

T. gianellii: 1) Absence of longitudinal ridges in mesoepistoma.

T. dobrogica: 1) Absence of transverse grooves in the 6 first pereonites; 2) distal article of the antennule with 6 aesthetascs (9 in *T. dobrogica*).

T. pallida: 1) Molar process of mandibles with 4-5 penicils (2 in *T. pallida*); 2) exite of the maxillula with 8 teeth, of which 1 bifid and 1 trifurcated (7, of which 2 bifid in *T. pallida*); 3) exopod of pleopod I of male subovoid (elliptic in *T. pallida*).

T. argentina: 1) Antennae stretched reach posterior margin of pereonite II (barely reaching posterior margin of pereonite I in *T. argentina*); 2) second article of the antennal flagellum with a suture; 3) exopod of pleopod I of male subovoid (ovoid in *T. argentina*); 3) endopods of uropods longer and stouter.

E t y m o l o g y . – The species name refers to the microhabitat.

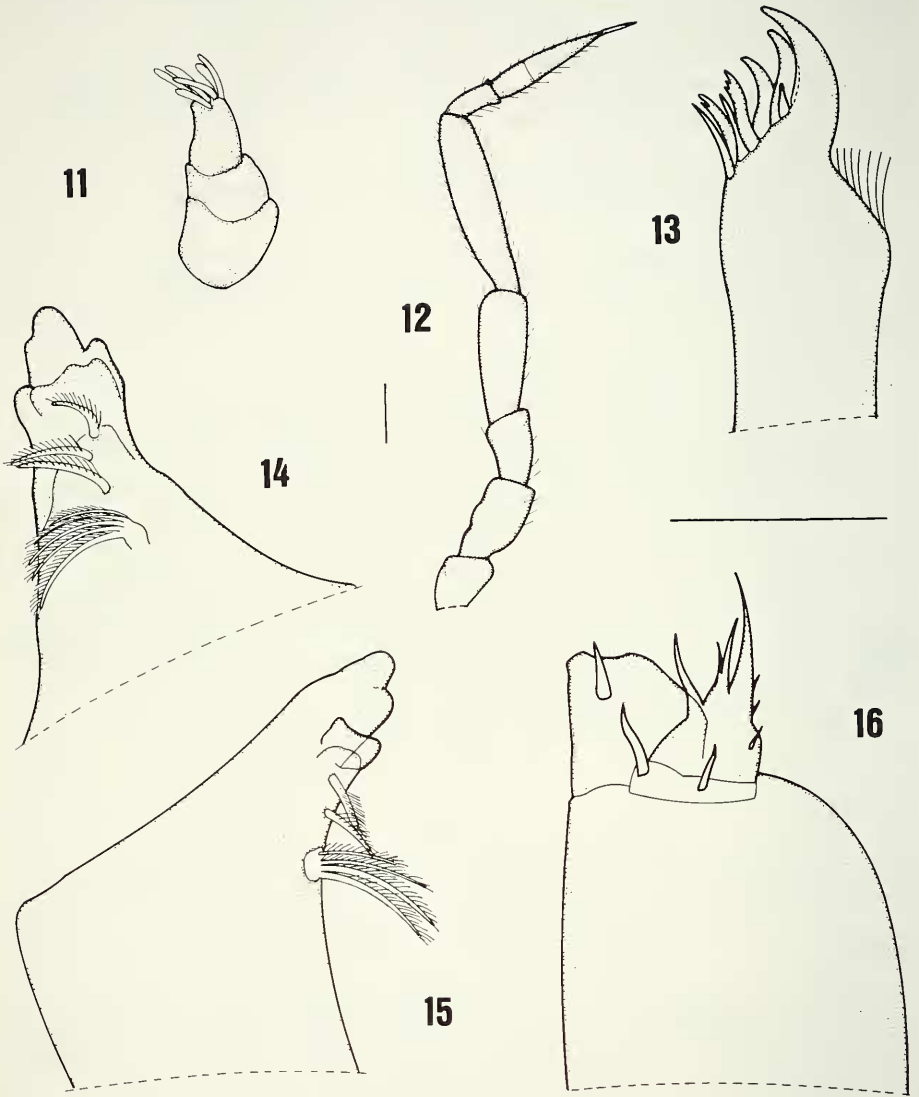
DESCRIPTION

M e a s u r e m e n t s . – Male 3.18 long, 1.12 wide; female 3.84 long, 1.33 wide.

C o l o u r . – Body faint pigmented in pale yellow, with small white spots in the head. Eyes black.

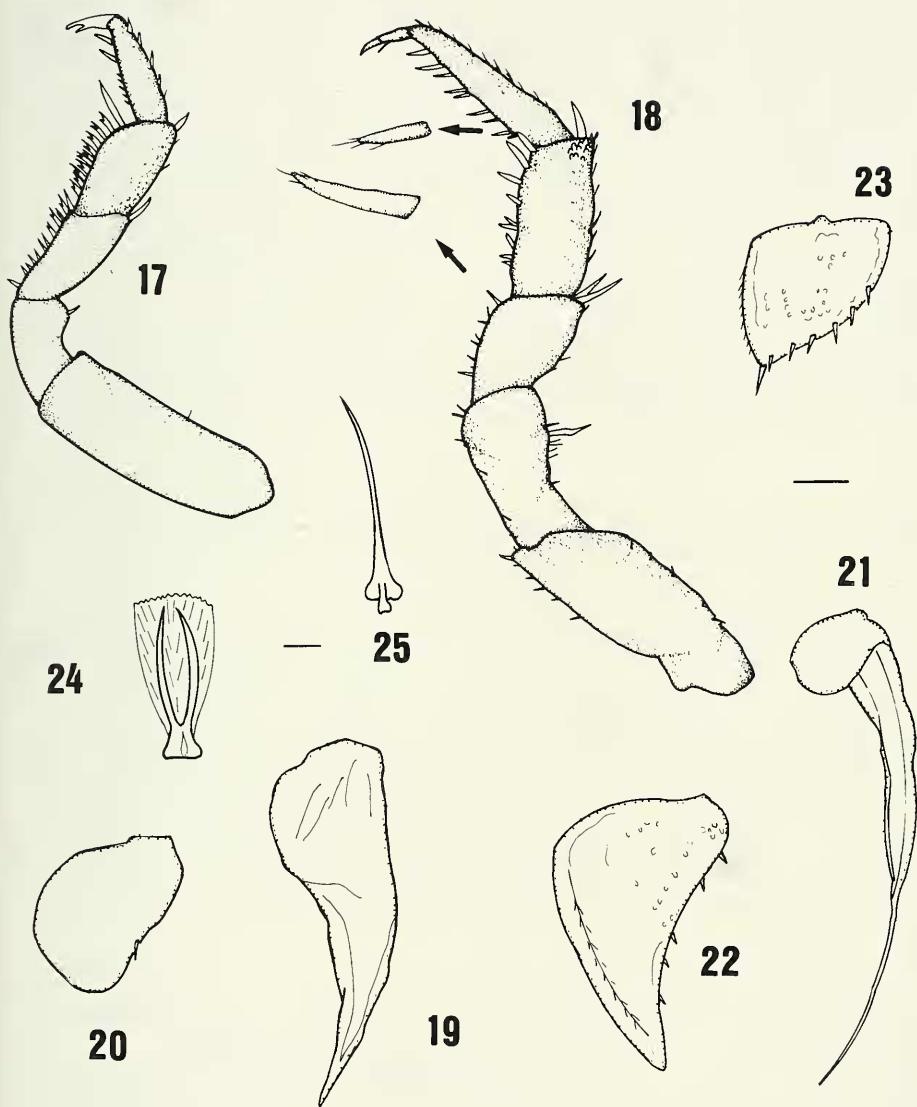
S o m a t i c c h a r a c t e r s . – Head not involved by pereonite I, well detached, with lateral lobes a little ahead of the median lobe, which has subtriangular apex. Eyes with 5 ommatids. Pleon outline continuous with pereon; pleonites III-V without protruding points.

T e g u m e n t . – Body surface smooth, with semicircular plates. Pereon, pleon and telson covered with flabelliform, quadriaxial and striated scale spines. Antenna with plates, tricorns and apical bristle in distal flagellar article. Noduli laterales without basal projections. Pereonite VII with 2 noduli laterales on each side. Graphics in Figs 26-27. Pereopods with bristles uni- or biramous, spines and trichia. Exopod of uropods with a tuft of bristles in the apex.



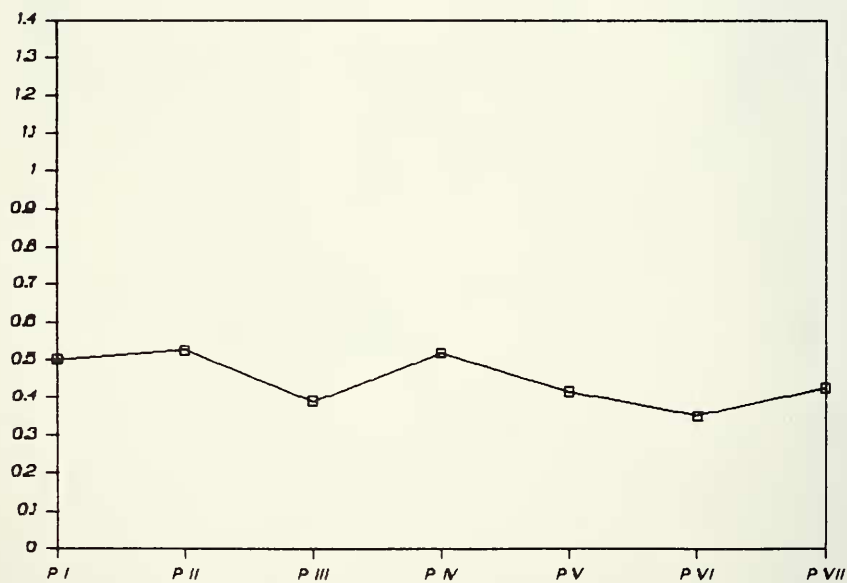
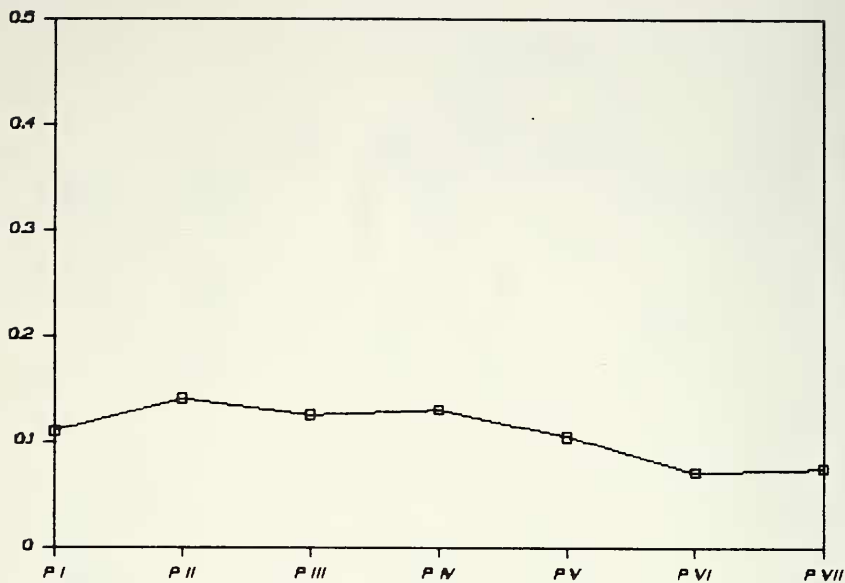
FIGS 11-16.

Trichorhina guanophila n. sp. Fig. 11. Antennule; Fig. 12. Antenna; Fig. 13. Exite of the maxillula; Fig. 14. Left mandible; Fig. 15. Right mandible; Fig. 16. Maxilliped.



FIGS 17-25.

Trichorhina guanophila n. sp. Fig. 17. Pereopod I of male; Fig. 18. Pereopod VII of male; Fig. 19. Endopod of pleopod I of male; Fig. 20. Exopod of pleopod I of male; Fig. 21. Endopod of pleopod II of male; Fig. 22. Exopod of pleopod II of male; Fig. 23. Exopod of pleopod V of male; Fig. 24. Scale spine of pereonite I; Fig. 25. Nodulus lateralis of pereonite I. Left scale bar = 0.01 mm Figs 24-25; right scale bar = 0.1 mm Figs 17-23.



Figs 26-27.

Trichorhina guanophila n. sp. Position of the noduli laterales relative to the margins of pereonites I-VII. Fig. 26. b/c (posterior margin); Fig. 27. d/c (lateral margin).

A p p e n d a g e s . – Antennule tri-articulated, distal article with 6 aesthetascs (Fig. 11). Antenna (Fig. 12) stretched reaches posterior margin of pereonite II. Second article of antennal peduncle without special structures. Second article of antennal flagellum with proximal suture well marked. Left mandible without rods between molar and incisor processes. Molar process of left mandible with 5, right mandible with 4 penicils (Fig. 15). Exite of maxillula with 4 teeth in outer group, one much smaller. Inner group with 4 teeth: one bifid, one trifid (Fig. 13). Endite of maxilliped without denticles on outer distal margin, with inner distal margin projecting and truncated (Fig. 16). Pleopods without respiratory areas.

Male sexual characters. – Pereopod I (Fig. 17) with bifurcated spines on merus (about 10) and carpus (about 18); pereopod VII (Fig. 18) without apparent dimorphism. Pleopod I with subovoid exopod; distal half of endopod curved to outside and apex undivided. Pleopod II with triangular exopod (Fig. 22); endopod with distal half much narrow (Fig. 21). Pleopod V with subtriangular exopod (Fig. 23).

Trichorhina macrops n. sp. (Figs 28-39)

Material examined. – Brazil, Pernambuco, Caruarú, Serra dos Cavalos: male holotype and female paratype (MNRJ uncat.) 20 Feb. 1980, leg. A. Castro.

Diagnosis. – Distinguished from all other species by the exceptionally great ommatid, which associated to the small port makes this species peculiar (Fig. 28). *Trichorhina macrops* n. sp. differs from *T. tomentosa* (and *T. tropica*) among other characters by 1) only one penicil in the molar process of mandible (Fig. 31); 2) outer branch of maxillula with 8 teeth (Fig. 30); 3) endite of maxilliped with a single and tiny spine; 4) the presence of male, and 5) its smaller size (for *T. tomentosa* see e. g. VANDEL, 1952: 103-107). It differs from *T. squamapleotelsona* (among other characters) by the narrowed pleon and by the different shape of the pleopods; pleon narrower than pereon. It differs from *T. hispanica* by the smooth tegument (without small ribs).

Etymology. – Species name is derived from Greek makros = large + ops = eye.

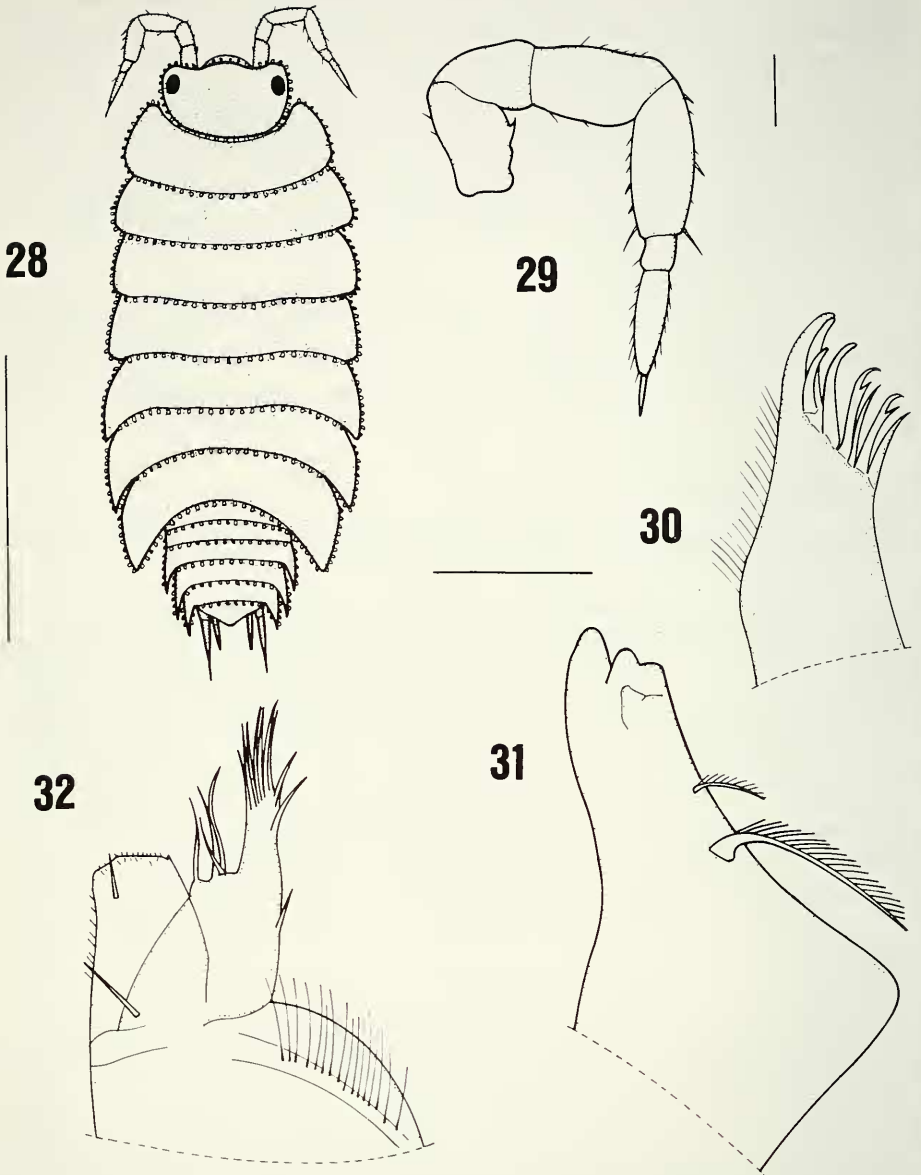
DESCRIPTION

Measurements – Male holotype 2.22 long 0.84 wide.

Colour (in alcohol) – The pigmentation is faint and restricted to small light-brown spots in the head and pereonites. Ommatids black.

Somatic Characters – Head slightly inserted in pereonite I, with small lateral lobes. Eyes formed by only one very large ommatid (Fig. 28). Pleon outline not continuous with pereon; pleonites III-V with distinct extremities (Fig. 28). Point of pleonite V reaching the line of the apex of telson (Fig. 28). Telson short, triangular, slightly longer than uropodal protopods (Fig. 28).

Tegument – Body surface smooth, covered with scale-spines. Posterior margin of pereonites with intercalate median and large-sized scale-spines; lateral margin of them bearing smaller scale-spines (flabelliform, quadriaxial and striated). A row of noduli



FIGS 28-32.

Trichorhina macrops n. sp. Fig. 28. Habitus, dorsal view; Fig. 29. Antenna; Fig. 30. Exite of the maxilla; Fig. 31. Right mandible; Fig. 32. Maxilliped. Left scale bar = 1 mm Fig. 28; central scale bar = 0.1 mm Figs 30-32; top scale bar = 0.1 mm Fig. 29.

laterales is present. Due to the poor state of the tegument, it was not possible to precise the position of noduli laterales. Pereopods armed with single-pointed spines longer at pereopod I. Antenna with plates, tricorns and apical bristle in distal article of flagellum. Exopods of uropods with an apical tuft of bristles.

A p p e n d a g e s – Antennula three-jointed. Antenna (Fig. 29) short, not reaching the second pereonite and with a two-segmented flagellum, distal segment larger than proximal, entire and without projections. Left mandible without rods between molar and incisor processes. Molar process of left and right mandible (Fig. 31) formed by one penicil. Outer branch of exite of maxillula (Fig. 30) with eight slender teeth, two bifurcate. Maxilla provided with fine setae. Endite of maxilliped (Fig. 32) hairy, with a very small spine in outer part of distal margin. Pleopods without respiratory areas.

Male sexual characteristics – Pereopods (Figs 33-34) without specializations, only a field of short hairs on carpus of pereopod I. Pleopod I (Fig. 36) with heart-shaped exopod; endopod short, simple, with posterior half recurved (Fig. 35). Pleopod II (Fig. 38) with exopod roughly triangular and the apex rounded; endopod with a strong narrowing on the posterior half. Exopod of pleopod V (Fig. 39) subtriangular with a row of short hairs on inner margin and some bristles on the opposite margin.

DISCUSSION

Trichorhina tropica Arcangeli, 1950 does not seem to be a valid species. It was not even figured in the original description, and it is said to be closest to *T. hospes* Silvestri, 1917 (which has four ommatids in the eye) as well as to *T. monocellata* Meinertz, 1934, established as a junior synonym of *T. tomentosa* by WÄCHTLER (1937:275). According to ARCANGELI (1950), *T. monocellata* differs from *T. tropica* by having black ommatids instead of reddish (“pigmentato in rossastro”). In the redescription of *T. tomentosa* by VANDEL (1952:105) this species is said to have the eye “enrobé dans une couche de pigment brun rougeâtre, brun rosâtre ou rosâtre”. FERRARA & TAITI (1983) indicate *T. tropica* as a possible synonym of *T. tomentosa*.

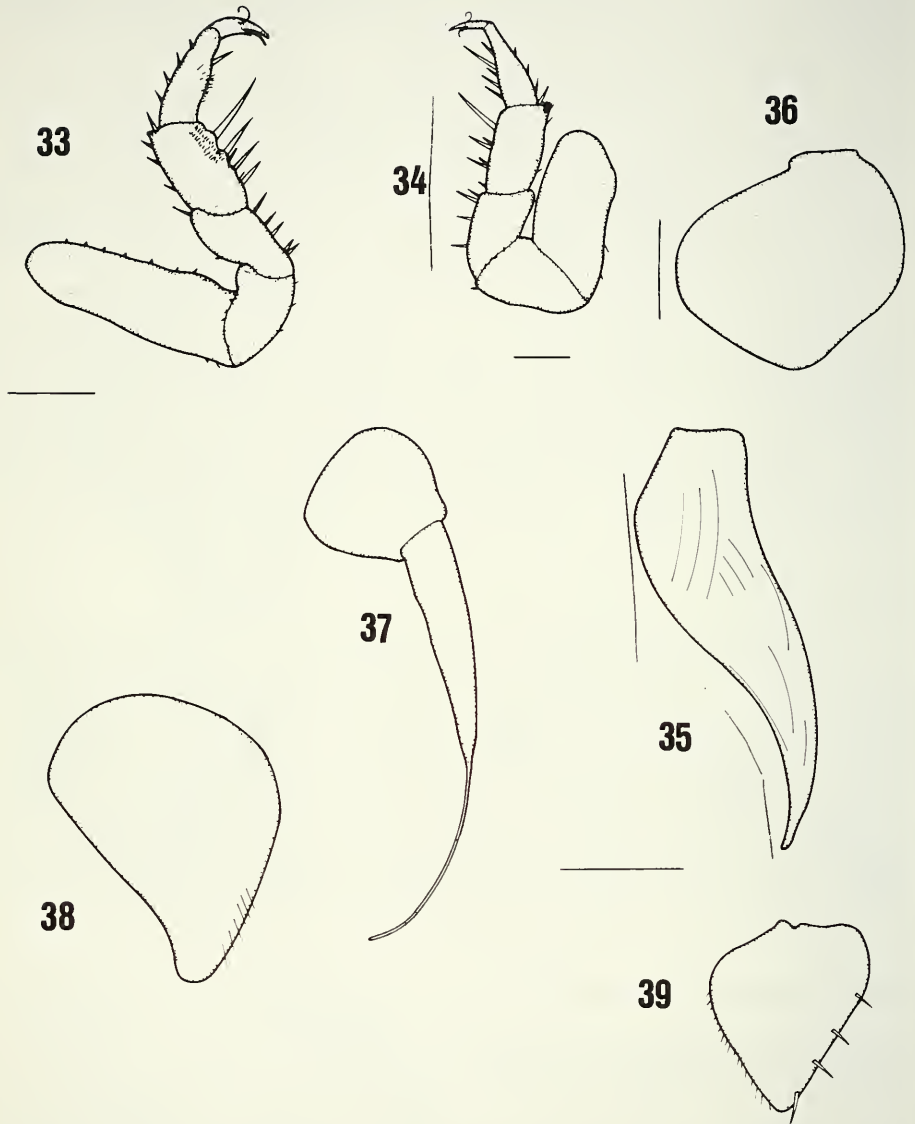
Trichorhina pearsei (Creaser, 1938)

Porcellio pearsei Creaser, 1938:160; PEARSE 1945:166; VANDEL 1950:206; MULAİK 1960:170.

Trichorhina pearsei, LEMOS DE CASTRO 1964:1.

Trichorhina yucatanensis Mulaik, 1960:142; LEMOS DE CASTRO 1964:1 **New synonymy**

Trichorhina pearsei, although having been described twice by different authors, remains a poorly known species, due to the very superficial descriptions. CREASER (1938) said the eyes are missing; MULAİK (1960) stated that a superficial observation makes the species appear to be blind, but under a larger magnification, one can distinguish light shining spots in the place of the eyes, and when the specimens are diaphanized in glycerol, dark pigmentation can be seen, evidencing the existence of an ocellus on each side. LEMOS DE CASTRO (1964), based on the coincidence of the



FIGS 33-39.

Trichorhina macrops n. sp. Fig. 33. Pereopod I of male; Fig. 34. Pereopod VII of male; Fig. 35. Endopod of pleopod I of male; Fig. 36. Exopod of pleopod I of male; Fig. 37. Endopod of pleopod II of male; Fig. 38. Exopod of pleopod II of male; Fig. 39. Exopod of pleopod V of male. Right scale bar = 0.1 mm Fig. 33; top scale bar = 0.1 mm Fig. 34; bottom scale bar = 0.1 mm Figs 35-39.

collecting data for *Porcellio pearsei* and *Trichorhina yucatanensis*, suggested the probable identity of both. The types of *T. yucatanensis* were collected by E. P. Creaser in 17 July 1936, while the type series of *P. pearsei* was collected in June, July and August 1936 in the same locality. The comparison of the original descriptions corroborates this suggestion – there is no evidence to keep the two alleged species as distinct.

ACKNOWLEDGEMENTS

I wish to thank F. Chaimowicz for donation of material of *T. guanophila*, and to Dr. A. M. S. P. Vanin (Instituto Oceanográfico, USP) for enabling me to study specimens from MNRJ. I am grateful to the late Dr. H. S. Lopes (USU) for laboratory facilities. Many thanks are due to Prof. A. B. Kury (UFRJ) for suggestions on the manuscript. This research project was supported by CAPES (Coordenação de Aperfeiçoamento de Pessoal de Ensino Superior) and FAPESP (Fundação de Amparo à Pesquisa do Estado de São Paulo).

REFERENCES

- ARCANGELI, A., 1950. Isopodi terrestri. Exploration du Parc National Albert. Mission H. Damas (1935-1936). *Bruxelles*, 15: 1-16, 121 pls.
- BOWMAN, T. A., 1977. Isopod crustaceans (except Anthuridae) collected on the presidential cruise of 1938. *Proc. Biol. Soc. Wash.*, 89(57): 653-666.
- CREASER, E. P., 1938. Fauna of the caves of Yucatan XII. Larger cave Crustacea of the Yucatan Peninsula. *Carnegie Inst. Wash., Publ.* 491: 159-164, figs 1-8.
- FERRARA, F. & TAITI, S., 1983. Contributions à l'étude de la faune terrestre des îles granitiques de l'archipel des Séchelles. *Ann. Mus. r. Afr. Centr. Tervuren-Zool.* 240: 1-92.
- LEMONS DE CASTRO, A., 1964. *Trichorhina heterophthalma*, nueva especie de isopodo terrestre cavernicola de Cuba. *Poeyana, Ser. A*, 2: 1-7.
- MULAİK, S., 1960. Contribución al conocimiento de los isopodos terrestres de Mexico (Isopoda, Oniscoidea). *Revta Soc. Mex. Hist. nat.*, 21 (1): 79-292, 36 pls.
- SCHULTZ, G. A., 1975. Terrestrial isopod crustaceans (Oniscoidea) from coastal sites in Georgia. *Bull. Georgia Acad. Sci.*, 34: 185-194.
- 1977. Terrestrial isopod crustaceans (Oniscoidea) from St. Catherines Island, Georgia. *Georgia Jour. Sci.*, 35: 151-158.
- TAITI, S. & FERRARA, 1991. Terrestrial isopods (Crustacea) from the Hawaiian islands. *Bishop Mus. occ. Papers*, 31: 202-227.
- VANDEL, A., 1946. La répartition géographique des Oniscoidea (Crustacés isopodes terrestres). *Bull. Biol. France et Belgique*, 79: 221-272.
- 1950. Isopodes terrestres recueillis par C. Bolivar et R. Jeannel (1928) and le Dr. Henriot (1946). *Arch. Zool. exp. et gén. Biospeologie*, 71: 183-210.
- 1952. Etude des isopodes terrestres récoltés au Venezuela par le Dr. G. Marcuzzi, suivie de considérations sur le peuplement du Continent de Gondwana. *Mem. Mus. civ. St. nat. Verona*, 3: 59-203.
- 1960. Les isopodes terrestres (1ère partie). *Faune de France*, 64: 1-416.

- 1968. Isopodes terrestres. *Mission Zoologique belge aux îles Galapagos et en Ecuador*, 1(1): 37-168.
 - 1973. Les isopodes terrestres et cavernicoles de l'île de Cuba. *Resultats Expédition biospéologique Cubano-Roumaine à Cuba*, 1: 153-188.
 - 1981. Les isopodes terrestres et cavernicoles de l'île de Cuba (deuxième mémoire). *Résultats Expédition biospéologique Cubano-Roumaine à Cuba*, 3: 35-76.
- WÄCHTLER, W., 1937. Isopoda (Asseln) in Die Tierwelt Mitteleuropas. *Leipzig*, 2 (2): 225-317.